

Claims:

1. Electric motor cartridge (1) comprising:
  - a first cartridge housing portion (2); and
  - a second cartridge housing portion (3);  
the cartridge housing portions (2, 3) being coupled together so as to assembly the electric motor cartridge (1) by radially and axially positioning a stator (4) there between.
2. Electric motor cartridge (1) according to claim 1, wherein each cartridge housing portion (2, 3) has a semi-shell shape substantially comprised by a bottom portion (5, 6) and a cylindrical wall portion (7, 8).
3. Electric motor cartridge (1) according to claim 2, wherein at least one of the cartridge housing portions (2, 3) is provided with at least one recess portion (9, 10) formed at the inner side of the axial end portion of the cylindrical wall portion (7, 8) which extends at least partially in the circumferential direction of the cylindrical wall (7, 8) for receiving a projection (11) of the stator (4).
4. Electric motor cartridge (1) according to claim 3, wherein each cartridge housing portion (2, 3) is provided with one recess portion (9, 10), wherein the recess portions (9, 10) are symmetrically to a plane defined by the abutting tips of the cylindrical wall end portions.
5. Electric motor cartridge (1) according to claim 4, wherein each cartridge housing portion (2, 3) provides a bore (12, 13) in the center of its bottom portion (5, 6).
6. Electric motor cartridge (1) according to claim 5, wherein at least one of the bottom portions (5, 6) is formed at least partly concave inwardly.

7. Electric motor cartridge (1) according to claim 6, wherein at least one contact area (14, 15) is formed at each of the cartridge housing portions (2, 3) so as to be in contact with respective counter contact areas of two housings (18, 19) between which the cartridge (1) is fittable.

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8. Electric motor cartridge (1) according to claim 7, wherein in at least one of the cartridge housing portions (2, 3) a circumferentially extending groove (16) is disposed so as to receive an o-ring (17) for sealing between the cartridge housing (2, 3) and one of the two housings (18, 19) between which the cartridge (1) is fittable.

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9. Electric motor cartridge (1) according to any one of the preceding claims, wherein cooling slits and any integrated piping for motor cooling is integrated in at least one of the cartridge housing portions (2, 3).

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10. Electric motor cartridge (1) according to any one of the preceding claims, wherein the cartridge housing (2, 3) is made of punched metal, any polymer potted material, any die casting material or any sand casting material.

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11. Electric motor cartridge (1) according to claim 10, wherein the properties of the material of the cartridge housing (2, 3) contributes to heat evacuation and heat protection.

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12. Electric motor cartridge (1) according to any of the preceding claims, wherein the material properties of the cartridge housing contributes to electromagnetic interference protection.

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13. Electric motor cartridge (1) according to any of the preceding claims, wherein at least one of the cartridge housings (2, 3) comprises a connector portion (20) for phases and sensor connections of an compressor motor.

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14. Electric motor comprising an electric motor cartridge (1) according to any of claims 1 to 13 and a rotor (21) being encompassed by the stator (4).

5    15. Electric motor according to claim 14, wherein the rotor (21) comprises two peripheral portions (22, 23) each having a smaller diameter compared to the diameter of a middle portion of the rotor (21) encompassed by the stator, each peripheral portion (22, 23) comprising a circumferential groove (24, 26) provided with a piston ring (25, 27) for sealing between the 10 inside and the outside of the cartridge (1).

16. Electric motor according to claim 14 or 15, further comprising material removal areas on said rotor (21) providing 15 a unitary rotational mass distribution of the rotor.

17. Electric motor according to claim 14, 15 or 16 further comprising a sensor member (28) for detecting the speed of the 20 rotor (21).

18. Electric motor according to any of claims 14 to 17, wherein phases and sensors connections are arranged in the connector portion (20) such that they plug directly to wiring end connections when assembling the compressor motor. 25

19. Turbocharger comprising an electric motor according to any of claims 14 to 18 and further comprising

a turbine housing (18) for accommodating a turbine wheel (29) driven by exhaust gas;

30       a center housing (31) for accommodating a shaft (34) and the electric motor, the shaft serving as a rotor (21) of the electric motor and extending from the turbine wheel (29) through a journal bearing (35) and the electric motor to a compressor wheel (32);

35       a compressor housing (19) for accommodating the compressor wheel (32); wherein

the compressor wheel (32) is driven by the turbine wheel (29) via the shaft (34) and can additionally be driven by the electric motor, and

5 the electric motor is accommodated in the center housing (31) such that the compressor motor is firmly fixed by connecting the center housing (31) to the compressor housing (19).

10 20. Turbocharger according to claim 19, wherein one of the cartridge housing portions (2) serves as a seal plate on the journal bearing (35) side and the other cartridge housing portion (3) serves as a backplate on the compressor wheel (32) side.

15 21. Compressor comprising an electric motor according to any of claims 14 to 18 and further comprising

a motor housing for accommodating a shaft and the electric motor, the shaft serving as a rotor of the electric motor and carrying a compressor wheel; and

20 a compressor housing for accommodating the compressor wheel; wherein

the electric motor is accommodated in the motor housing such that the compressor motor is firmly fixed by connecting the motor housing to the compressor housing.